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NAVAL AIR SYSTEMS COMMAND
DEPARTMENT OF THE NAVY

CRITICAL ITEM PRODUCT FABRICATION SPECIFICATION FOR PALLET, BOMB, SHIPPING AND STORAGE MHU-212 A/E

NAVAL PHST CENTER
NAVAL SURFACE WARFARE CENTER, INDIAN HEAD DIVISION
DETACHMENT EARLE
201 HIGHWAY 34 SOUTH
COLTS NECK, NEW JERSEY 07722-5023

APPROVED FOR NAVAIR

K. H. ZIMMS
NAVAL PHST CENTER, NSWCIHD DET EARLE, CODE E4
NAVSEA TECHNICAL WARRANTED AUTHORITY FOR PHST

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CRITICAL ITEM PRODUCT FABRICATION SPECIFICATION FOR PALLET, BOMB, SHIPPING AND STORAGE MHU-212A/E

1. SCOPE.

1.1 Scope. This specification establishes the requirements for manufacture and Government acceptance of the Pallet, Bomb, Shipping and Storage, MHU-212A/E.

2. APPLICABLE DOCUMENTS.

2.1 Issue of documents. The following documents of the issue in effect on the date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

STANDARDS

Military

MIL-STD-129	Military Marking for Shipment and Storage
MIL-STD-1660	Design Criteria for Ammunition Unit Loads

Commercial

ASQ-Q9001	Quality Management Systems - Requirements
EIA-649	National Consensus Standard for Configuration Management

DRAWINGS

Naval Sea Systems Command

(10001) DL 2643168	Sling, Torpedo, Mk 102 Mod 0
(10001) DL 2643792	Sling, Mk 111 Mod 0

Naval Air Systems Command

(30003) ADL 3728AS100	Pallet, Bomb, Shipping and Storage, MHU-212 A/E
(30003) 367AS101	BLU-116 A/B Penetrator Bomb
(30003) 923AS673	BLU-109 A/B Thermal Coated Bomb

Copies of military specifications, federal and military standards or drawings may be obtained upon request from Standardization Documents Order Desk, Bldg. 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094. Drawings and technical specifications may be obtained from the contracting activity. Copies of commercial documents may be obtained by contacting the applicable organization listed below:

ASQ – American Society for Quality
P.O. Box 3005
Milwaukee, WI 53201-3005

EIA – Government Electronics and Information Technology Association
2500 Wilson Boulevard
Arlington, VA 22201-3834

2.2 Conflicting requirements. Conflicting requirements arising between this specification or any specification, publication or drawing listed herein shall be referred in writing to the Procurement Contracting Officer for interpretation, clarification, and correction.

2.3 Request for change. Changes of a minor and or major nature will be granted only by the cognizant field activity (CFA), that is the Naval Surface Warfare Center, Indian Head Division, (NSWCIHD) Detachment Earle. The provisions of the Material Review Board (MRB) do not apply to this item. Requests for deviations, waivers, or other changes to this specification or referenced documentation shall be submitted to the Procurement Contracting Officer (PCO) for approval. A copy of the request for change shall be forwarded to the Packaging, Handling, Storage and Transportation (PHST) Center, Naval Surface Warfare Center, Indian Head Division, Detachment Earle, Code E411. Changes shall be prepared and submitted in accordance with the requirements of the contract. EIA-649 "National Consensus Standard for Configuration Management" may be used for general guidance in preparing the request.

3. REQUIREMENTS.

3.1 Item definition. The Pallet, Bomb, Shipping and Storage MHU-212A/E, hereinafter referred to as pallet, is a steel weldment consisting of a top and bottom frame. Saddles are welded into the frames to support two thermally coated or non-thermally coated bombs, and receptacles are welded into the bottom frame to accommodate the aft bomb lugs, preventing bomb rotation during shipment.

3.2 Characteristics.

3.2.1 Performance. The pallet shall meet the following performance requirements.

3.2.1.1 Inspection. The pallet, when examined in accordance with 3.6.1 and 4.2.1 shall comply with the fabrication and assembly requirements of ADL 3728AS100 and other drawings and specifications listed thereon.

3.2.1.2 Pallet interface.

3.2.1.2.1 Weapon. The BLU-109 A/B Thermal Coated Bomb (defined in Drawing 923AS673), or the BLU-116 A/B Penetrator Bomb (defined in Drawing 367AS101) shall be secured in, and removed from the pallet utilizing only the prescribed handling equipment. The pallet shall demonstrate proper support of the weapon without interference or binding when subjected to the test of 3.6.2.

3.2.1.2.2 Stacking interface. The pallet stacking features shall demonstrate both proper support and interface while being stacked and unstacked without interference or binding when subjected to the test of 3.6.3.

3.2.1.2.3 Stacking (tiering). The pallet shall show no evidence of damage, deformation or weld failures that would affect the usability of the pallet when subjected to the test of 3.6.3.1.

3.2.1.3 Shock. The pallet shall not sustain structural damage/deformation that would affect its continued safe handling nor exhibit any evidence of weld failures or the failure to restrain and/or protect the weapon from damage when subjected to the following tests:

a. Cornerwise drop. (See 3.6.4)

b. Edgewise drop. (See 3.6.5)

c. Impact tests. (See 3.6.6)

d. Repetitive shock (superimposed load). (See 3.6.7)

e. Mechanical handling tests. (See 3.6.8)

3.2.1.4 Disassembly test. Following the rough handling shock tests listed above, the pallet shall be subjected to the test of 3.6.9. Failure of the pallet to retain its unity or contents shall be considered unacceptable.

3.3 Design and construction.

3.3.1 Production drawings. The pallet shall be fabricated and assembled in accordance with ADL 3728AS100.

3.3.2 Standards of manufacture. The detailed requirements for materials, design and construction of pallets to be manufactured in accordance with this specification are provided by ADL 3728AS100 and the drawings, specifications and standards listed thereon.

3.3.3 Workmanship. Workmanship shall be of sufficiently high quality to assure that completed pallets will comply with all requirements of this specification and of ADL 3728AS100 and the drawings, specifications and standards listed thereon. Particular attention shall be paid to zinc galvanizing, welding, marking and freedom of parts from burrs and sharp edges. Galvanizing spikes and flaking shall be kept to a minimum, with none appearing on the (bomb) saddle areas. Overall, zinc galvanizing shall be uniformly smooth and present no hazard to operating personnel. The assembled pallets shall be thoroughly cleaned of all dirt, chips, and other foreign matter.

3.4 Identification.

3.4.1 Serialization. Serialization of the pallet is not required.

3.5 First article. Unless otherwise specified in the contract or purchase order, one preproduction sample, hereinafter referred to as the first article, shall be inspected and tested prior to regular production. The first article shall be fully representative of those proposed for production and demonstrate the adequacy and suitability of the contractor's processes and procedures in complying with the requirements set forth by this specification. Inspection and testing of the first article shall be completed before production of the remaining pallets. The Naval PHST Center shall prepare a written test report at the conclusion of first article testing.

3.5.1 First article sample submission. Unless otherwise specified in the contract or purchase order, the Government shall be responsible for performing the test/inspection requirements of this specification. The contractor shall be responsible for delivery of the first article(s) to:

Naval Surface Warfare Center
Indian Head Division, Detachment Earle
Building C-54, Code E423
201 Highway 34 South
Colts Neck, NJ 07722-5023

3.5.2 Certification of galvanized zinc coating. The contractor (or subcontractor for the coating) shall submit certification for the galvanized zinc coating identifying the process type used on company letterhead, or with company trademark seal. The certification may be original, or a copy thereof. Certification is required for each first article submittal.

3.6 First article inspection and tests.

3.6.1 Inspection. Prior to all tests, the first article pallet shall be 100 percent physically examined for compliance with ADL 3728AS100. Inspection shall consist of a visual and dimensional inspection of the characteristics of the component parts and complete pallets to ensure compliance with the drawings and notes thereon. Measuring instruments sufficient to verify drawing tolerances shall be used. Inspection shall include the examination of material certifications and the comparison of these documents with the item(s) they describe. [The Government reserves the right to physically destruct the first article pallet(s).]

3.6.2 Weapon interface test. This test shall be conducted by bringing together the first article pallet and an inert load which simulate the intended load of two BLU-109 A/B thermally coated bombs or two BLU-116 A/B Penetrator bombs. The bombs shall be placed in position and the pallet shall be assembled in its normal shipping condition by fastening all restraining devices and otherwise completely securing the pallet for shipment. The Mk 102 Mod 0 Torpedo Sling (DL 2643168) or the Mk 111 Mod 0 Sling (DL 2643792) shall be used to load and unload the pallet. Care shall be exercised to assure that both the pallet and the load are representative of the final configuration and that the normal dimensional variations are considered. The pallet shall meet the requirements of 3.2.1.2.1.

3.6.3 Stacking (feature) interface test. The loaded first article pallet shall be stacked below another like loaded pallet and the stacking feature interface shall be examined. The pallet shall meet the requirements of 3.2.1.2.2.

3.6.3.1 Stacking test (tiering). A load to simulate a stack of identical loaded pallets, with a weight of 21,600 pounds, shall be placed on the loaded first article pallet for a one-hour period in accordance with MIL-STD-1660. The configuration shall simulate a stack of 6 loaded pallets. The pallet shall meet the requirements of 3.2.1.2.3 with the load removed.

3.6.4 Cornerwise drop test (rotational). The first article pallet, loaded with its simulated intended load and assembled in its normal shipping condition shall be placed on its bottom. One corner of the pallet base shall be supported by a block nominally 6-inches in height. A block nominally 12-inches in height shall be placed under the other corner of the same end. The unsupported end of the pallet shall be raised so that the lower corner of that end reaches a height of 12-inches from the impact surface and allowed to drop to an unyielding surface. All four corners of the pallet shall be tested. After testing, the pallet shall meet the requirements of 3.2.1.3.

3.6.5 Edgewise drop tests. The first article pallet, loaded with its simulated intended load and assembled in its normal shipping condition shall be placed on its bottom and moved to a flat unyielding surface. One edge of the pallet shall be placed on a block 6 inches in height. The opposite edge of the pallet shall be elevated to a height of 12 inches from the impact surface and allowed it to drop freely. Following this drop, the 6-inch

block shall be moved and the other three (3) edges of the pallet shall be dropped in a similar manner. After testing, the pallet shall meet the requirements of 3.2.1.3.

3.6.6 Impact test (with optional timber). The first article pallet, loaded with its simulated intended load and assembled in its normal shipping condition shall be subjected to side and end impact tests. The test shall be conducted using an incline-impact tester consisting of a two rail steel track inclined to 10º from the horizontal, a rolling carriage, or dolly, a large unyielding surface and a rigid timber (such as a 4" x 4") positioned to impact against the bottom of the pallet. The loaded pallet shall be placed on the carriage with the surface or edge which is to be impacted, projecting at least 2-inches beyond the front end of the carriage. The carriage shall be brought to a predetermined position and released with an impact velocity of 7 ft/s. The nose, the tail, and one side of the pallet shall be impacted. After testing, the pallet shall meet the requirements of 3.2.1.3.

3.6.7 Repetitive shock test (superimposed load). The first article pallet shall be loaded with its simulated intended load and brought together with another like pallet (also loaded). The first article pallet shall be the lower of the two during test. Both pallets shall be configured two high in normal shipping configuration and placed on, but not fastened to, the test platform. Restraining devices shall be attached to the platform to prevent the pallets from moving off the platform and, if necessary, to prevent excessive rocking of the pallets. The restraining devices should be adjusted to permit unrestrained movement of the pallets from its centered position about 1/2-inch in any horizontal direction. With the pallets in one position, vibrate the platform at 1/2-inch amplitude (1-inch double amplitude) starting at a frequency of about 3 cycles per second. Steadily increase the frequency until the top pallet leaves the bottom pallet (until a 1/16-inch thick feeler may be slid freely between every point on the bottom of the top pallet and the top of the bottom pallet at some instant during the cycle) or until the frequency reaches that at which the maximum platform acceleration is 1 +/- 0.1 times the acceleration of gravity. If circular motion is used, table frequency shall be adjusted to assure that one edge of the pallet leaves the table not less than 3/16-inch on each cycle. After testing, the pallet shall meet the requirements of 3.2.1.3.

3.6.8 Mechanical handling tests. The pallet, loaded with its simulated intended load and assembled in its normal shipping condition shall be subjected to the following mechanical handling tests:

a. Lifting and transporting. The pallet shall be lifted with hard tire forklift truck and driven over a 100-foot long course in about 23 seconds. Three parallel pairs of 1 x 4 inch boards shall be placed flat across the path of the truck. Each pair shall be spaced 54-inches apart. The first pair shall be placed at a 90º angle across the truck's path and centered 30-feet apart from the starting point. The second pair shall be 60-feet from the starting point at a 60º angle to the truck's path, allowing the left wheel to strike first. The third pair shall be placed 90-feet from the starting point at a 75º angle to the truck's path, allowing the right wheel to strike first. After testing, the pallet shall meet the requirements of 3.2.1.3.

b. Pushing test. The forklift truck shall be placed at the side of the pallet. The forks shall be placed into the side fork pockets, but should not support the pallet. The pallet shall be pushed 35-feet along a dry, hard pavement in about 85 seconds, at a uniform speed. This test shall be repeated on the adjacent end of the pallet. After testing, the pallet shall meet the requirements of 3.2.1.3.

c. Towing test. A sling shall be looped through the fork pockets on the side of the pallet and attached to a forklift. The pallet shall be laid flat on a dry, hard surface and towed 100-feet in about 23 seconds, at a uniform speed. This test shall be repeated with the on the adjacent end of the pallet. After testing, the pallet shall meet the requirements of 3.2.1.3.

3.6.9 Disassembly test. The first article pallet (complete with load), following completion of all rough handling tests, shall be subjected to the disassembly test in accordance with MIL-STD-1660. The pallet shall meet the requirements of 3.2.1.4.

4. QUALITY ASSURANCE PROVISIONS

4.1 General. The contractor shall provide an inspection system conforming to the requirements of ASQ-Q9001, or other inspection systems approved by the Government and assure that all parts and materials submitted conform to the requirements of this specification and drawings listed herein. Except as otherwise specified in the contract or purchase order, the supplier may use their own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any inspections set forth in this specification where such inspections are deemed necessary to assure the supplier and services conform to prescribed requirements. The procedures used for process control and inspection are at the option of the contractor, provided objective, documented evidence is maintained and made available upon request by the Government. Unless otherwise specified, all tests shall be performed at an ambient temperature of 70 ± 20 degrees Fahrenheit with ambient humidity.

4.2 Production quality conformance inspection.

4.2.1 Production lot samples. Unless specified in the contract or purchase order, prior to delivery, the Government shall perform a sample lot inspection of the production pallet. An authorized agent of the U.S. Government shall randomly select up to 2% of the total production quantity pallets. [If the total production quantity is less then 100, the minimum sample shall be one pallet]. Unless otherwise specified, the contractor shall be responsible for delivery of the production item(s) to:

Naval Surface Warfare Center
Indian Head Division, Detachment Earle
Bldg C-54, Code E423
201 Highway 34 South
Colts Neck, NJ 07722-5023

Each pallet shall be 100% physically examined for compliance with ADL 3728AS100, associated drawings and notes. Inspection shall consist of a visual and dimensional examination of the component parts, subassemblies, and complete assembly to ensure compliance with the applicable drawings and their associated notes.

5. PREPARATION FOR DELIVERY

5.1 Packing. The pallet requires no packing for delivery. However, the pallet shall be secured in such a manner as to prevent damage or deterioration while in transit from the contractor's plant to the receiving activity. All conveyances shall be loaded, blocked and braced in accordance with best commercial practices.

5.2 Marking. In addition to any special marking required by the contract or purchase order, the pallets shall be marked in accordance with MIL-STD-129.

5.3 Documentation. Copies of DD Form 250 (DD-250), Material Inspection and Test Receiving Report and DD Form 1222 (DD-1222), Request for Results and Tests, shall accompany each first article and production submission.